

# A SUMMARY OF PUBLISHED WORK ON THE PHYSICAL ANTHROPOLOGY OF THE TASMANIAN ABORIGINES

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## THE SKELETON

Studies of the skeletal morphology of the Tasmanian aborigines suffer largely from two restrictions. In the first place, the amount of skeletal material available for study is very small, and in the second, particulars as to the origins of it are known certainly in very few instances. Add to these the difficulties arising from the wide dispersal of the collections, about half being in Europe and the United States and half in Australia, and it will be realised that it is not easy to arrive at a clear picture of the characteristics of and range of variation in the Tasmanian skeleton.

Skeletal material in European collections comprised, at the beginning of 1939, five complete skeletons, about eighty skulls, a pelvis and a few long bones: in the war of 1939-1945 three skeletons, thirty-five skulls and the long bones were destroyed, all this except one skull being material in the Royal College of Surgeons of England (Plomley, 1962). In Australian collections there were, in the same year, one hundred and fourteen skulls considered either then or earlier to have been Tasmanian (Wunderly, 1939); as well as one complete and one nearly complete skeleton, and a number of separate bones, largely those from the limbs, most of which were in the collections of the Tasmanian Museum at Hobart (Crowther and Lord, 1921). In the United States, published information suggests that there is only a small number of skulls, perhaps a dozen, in national collections, of which three had earlier been in one of the British collections.

The provenance of these collections of skeletal material is far from satisfactory, and as a result there has been (a) discussion of the validity of this specimen or that, which has taken place in regard to the Australian collections particularly; (b) the development of a description of the Tasmanian skull from specimens which conform most closely to the series of characters, metrical and non-metrical, held to be typically Tasmanian, rather than from the study of skulls known to have been those of Tasmanian aborigines; and, arising out of the foregoing, (c) abnormally low values for variability in the data, and a failure to appreciate fully the range of variation in the characters of the race (Morant, 1939).

It is not to be wondered at that such discussion has arisen. Thus, of the crania listed by Plomley (1962) as being in European collections, about seventy have no locality data other than "Tasmania"; and of those for which a more restricted locality is given, there is sometimes doubt whether the locality data are correct,

the examination of other records opening up other interpretations.

It may be well here to emphasise certain facts about the Tasmanian locality as a source of skeletal remains. The most important fact is that there are no known aboriginal burial grounds in Tasmania: most of the tribes practised cremation, and those which did not disposed of bodies haphazardly. So far as known all crania in collections are those of aborigines dying after 1803 when the island was first settled and, although dates are not given, the names of collectors, when recorded, suggest that collecting did not begin before about 1820.\* The collecting data also show that acquisitions ranged from specimens obtained in such circumstances that there was little or no doubt as to their authenticity, to those acquired without other evidence of their origin than finding in Tasmania.† Material in the latter category must always be doubtful: from the time of the first settlement (and probably from a few years earlier, if we take account of the sealers) there was a mixture of races in Tasmania, and hybrids originating in the prostitution of the native women were also to be found. Among those coming to Tasmania were negroes, polynesians, asiatics, and of course Australian aborigines. Under these conditions the perils of collecting are obvious. Thus, we find a skull described as Tasmanian because it had been collected in Hobart (Blanchard, 1854), but which was found later to have been that of an Australian aboriginal (Quatrefages and Hamy, 1882); and material in the "Tasman series" has been classified as hybrid because it did not fit the narrow confines of supposed morphology (Wunderly, 1939). Lastly, it is worth emphasising one point about the graveyard of the aboriginal settlement at Flinders Island, from which skeletal remains have been removed: not all the burials there were those of Tasmanian full-bloods.

\* Except perhaps for one skull, no skeletal remains were brought back by the exploring expeditions which visited Tasmania before it was settled.

† Such was the avidity of some collectors to possess the skull of a Tasmanian aboriginal that it was sufficient for it to be labelled "Tasmanian".

## THE SKULL

The description of the Tasmanian skull has its basis in an assessment of the characters of a group of skulls said to be Tasmanian. This assessment has then been used as the basis of classification of other skulls, designating them as Tasmanian or not according to whether

they do or do not possess those features considered to be characteristic of the Tasmanian skull. This is no less than circular argument: a series of characters is laid down as Tasmanian on the basis of the examination of skulls believed to be Tasmanian, and this yardstick is then used to classify other skulls, both those said to be Tasmanian and those not so labelled. It is obvious that while such a method will classify as Tasmanian a group of "typical" skulls and do so fairly definitely, it will certainly not enable us to select all skulls which are Tasmanian and reject all those which are not. What has been done by this method of procedure is to select the group of skulls whose characters are close to mean values, but to reject those whose characters lie outside this range; and as different workers have set the limits of the range of variation at different points, discussion has arisen as to the status of this skull or that.

It is generally agreed that the Tasmanian skull shows a distinctive assemblage of characters, the definition of which has gained precision with the work of Turner (1908, 1910). However, description of the Tasmanian skull has tended to suffer from the fact that no one person has examined all the material available, something which would be of value in view of the small number of crania available for study. Generally speaking, Australian workers have not examined the European collections, nor European workers the Australian series.

The non-metrical characters of the Tasmanian skull have been reviewed by Turner (1908, 1910), by Wunderly and Wood Jones (1933), and by Wunderly (1939). These authors have drawn attention to the distinct frontal eminences, prominent parietal eminences and approximately pentagonal form of the vault, with keeling along the line of the sagittal suture, especially anteriorly. Between the obelion and the lambdoid suture the surface of the vault is flattened. The glabella and superciliary ridges are strong in males, overhanging the orbits, and the nasion is deeply depressed. The nasals are short and narrow. The floor of the nose continues smoothly into the incisive area and is not separated from it by a sharp ridge. The anterior nasal spine is poorly developed. The width of the anterior nares is at least half their height and sometimes much wider. The orbital aperture is transversely elongated (rectangular) and relative'y low. The hard palate is shallow rather than deeply vaulted. The styloid process is small to rudimentary. Sutural bones occur commonly in the occipital area (84% of skulls in one series). The mastoid processes and inion are not massive; the superior nuchal line is sometimes prominent and divided into upper and lower parts.

The principal workers in Australia who have published studies of the Tasmanian skull are Berry and his co-workers (1909, etc.), Harper and Clarke (1898), Wood Jones (1929), and Wunderly (1939). Their work has been reviewed by Wunderly (1939) who examined the whole of the Australian collections then known. Wunderly dealt with 114 crania, complete or fragmentary, which had been designated Tasmanian at one time or another. Of these he considered there to be:—

Tasmanian full-bloods — 31 ♂♂, 27 ♀♀,	
2 ⊙ ⊙, 7 mandibles	67
Tasmanian-European hybrids — 1 ♂, 6 ♀♀	7
Tasmanian-Australian hybrids — 2 ♂♂, 7 ♀♀	9
Australian full-bloods — 4 ♂♂, 6 ♀♀, 1 ⊙,	
1 mandible	12
Australian-European hybrids — 3 ♀♀	3
Of unknown race, lost or fragmentary	16

Wunderly gives metrical data for most of the Tasmanian full-bloods (31 ♂♂, 27 ♀♀) and Tasmanian-Australian hybrids (1 ♂, 7 ♀♀). In the absence of metrical data for the other specimens and especially for those classified as hybrids, it is not possible to arrive at an opinion as to whether Wunderly has been too strict in his selection of Tasmanian skulls, as his standard deviations suggest (Morant, 1939); but there are other grounds for debating some of the conclusions reached in this paper and in that on the aborigines of the west coast of Tasmania (1938). These are:—(a) there do not seem to be any grounds for attributing the skeletal material collected at Eaglehawk Neck (Lord, 1919) to an early occupation; (b) neither the collecting data, nor the history of hybridisation in the Bass Strait region from the time when the islands were occupied by the sealers, support the view that hybridisation between Tasmanian and Australian aborigines was anything but of rare occurrence — for eight skulls of such composition to be found along the north-west coast of Tasmania, 15% of the Tasmanian crania in his series, seems incredible; and (c) much of the evidence presented in support of the view that the aborigines of the west coast were culturally and morphologically distinct from those of other areas is of doubtful validity, but if a supposed Australian type occupied the region, as Wunderly concludes from an examination of the skull, then it must be accepted as a local variant within the range of Tasmanian morphology.

Tasmanian crania in collections in Europe have been examined by a number of workers — Barnard Davis (1867, 1874, 1875), Flower (1879), Garson (1899), and Turner (1908, 1910); Basedow (1910), Klaatsch (1903, 1908), and Pöch (1916); Broca (1879), Quatrefages and Hamy (1882), and Topinard (1872). Metrical data have not been published for all these crania, nor have their non-metrical characters been analysed. In almost all collections there are some crania not yet described and measured; metrical data on the crania of the Royal Army Medical College and of the British Museum series have not been published; and the crania in Paris are largely referred to in terms of means of groups of them.\* It should be noted also that the skull in Vienna described and measured by Pöch is No. 3 of the Harper and Clarke series and has also been described and measured by the latter authors. Morant (1927) has reviewed all the metrical data published for Tasmanian crania in European collections, as well as the Harper and Clarke (1898) measurements and those of Berry, Robertson and Buchner (1914).

\* Broca's individual measurements of the Paris skulls have now been found. An Australian skull is included among the males.

## DENTITION

Very little information is to be obtained from the literature\* concerning dental characters in the Tasmanians. The teeth are megadont, and the dental arches well developed.

\* Steadman (1937) has provided descriptions of the dentition in crania in collections in England, including those in the Royal College of Surgeons which are now destroyed.

Steadman (1937) had directed attention to the marked attrition found in the teeth, and to malocclusion resulting from this; and to a number of cases of impaction, usually of the upper third molars, with crowding due to the large size of the molar teeth. He also noted that there was very little periodontal disease and dental caries.

However, no detailed study has been published on the teeth and alveolar arches in the Tasmanians, on the lines of the well-known study by Campbell (1925) on the Australian aboriginal.

Although it has been suggested that tooth avulsion was practised by the natives, a review of supposed cases suggests rather the haphazard loss of teeth by injury.

### AXIAL SKELETON

Except for some measurements of femora by Wunderly (1939) and by Abbie (1964), the only work on the axial skeleton refers to the five complete skeletons and a pelvis in European collections prior to 1939. Garson has reviewed most of this work.

The lumbar curve was first studied by Cunningham (1886) who found that the sum of the heights of the bodies of the lumbar vertebrae was greater posteriorly than anteriorly in all except the fifth, giving lumbo-vertebral indices of 108.5 in the two males examined and 104.7 in the female. A general lumbar index of 101.6 was found in the male measured by Turner (1910). This is the opposite to the condition in Europeans, where the greater height of the lumbar bodies anteriorly contributes significantly to the lumbar curvature.

Some particulars of vertebral structure have been given by Turner (1910) for the skeleton in Brussels. The spinous processes of cervical vertebrae 3-7 were non-bifid in the three skeletons examined by Cunningham (1886); C3-5 slightly bifid in one skeleton, and in the Brussels skeleton (Turner, 1910).

Some notes on the ribs and sternum of the Brussels skeleton are given by Turner (1910); and notes on the thorax by Garson (1899).

### APPENDICULAR SKELETON

Measurements made on the four skeletons in Britain, three of which are now destroyed, have been published by Barnard Davis (1874), by Garson (1899), and by Klaatsch (1903); and a series for the Brussels skeleton by Turner (1910). Unfortunately, Barnard Davis' measurements contain mistakes, apparently arising in the calculation of millimetre equivalents for his measurements in inches: some of these mistakes are large. Garson examined the same material but he gives only a few individual measurements (and there is one large, though obvious, mistake), so that there is no check on Barnard Davis' measurements; moreover, several of the measurements do not correspond. Thus, Garson states that the radius in the female measured 214.5 mm and Barnard Davis 234 mm. Under these circumstances many of the measurements made by Barnard Davis and by Garson are of doubtful value.

The limb bones of the Tasmanians are generally robust, in this character differing markedly from those of the Australian aborigines.

### UPPER EXTREMITY

#### Scapula

The scapula in the Tasmanians shows unusual characters, being short in proportion to its breadth, so that both the scapular and infra-spinous indices are lower than in Europeans and many other races, e.g. Australians and Andamanese (Garson, 1899; Klaatsch, 1903; Turner, 1910).

#### Radius and ulna

In view of the difficulty in reconciling the measurements made by Barnard Davis and by Garson, only Turner's measurements can at present be used. In the Tasmanians the forearm is longer than the upper arm in comparison with Europeans, the Tasmanians resembling in this character the Australian aboriginal.

### LOWER EXTREMITY

#### Pelvis

The pelves in British collections (3 ♂♂, 1 ♀) have been described by Barnard Davis (1874), and by Garson (1899); that of the male skeleton in Brussels by Turner (1910); and a separate male pelvis in Paris by Verneau (1875), and by Garson (1899).

In the four males, Garson found the antero-posterior diameter of the brim to be almost the same as in the European, but the transverse diameter to be less, giving a pelvic index of 93.1 in the Tasmanians as compared with 78.3 in Europeans. The infra-pubic angle, about 60°, was more acute in the Tasmanian pelvis than in European. Turner found the Brussels specimen to be exceptional in regard to the above measurements.

The size and shape of the greater sciatic notch, which is usually one of the most valuable guides in sexing, is about the same in male and female Tasmanians (Abbie, 1964).

The sacrum was relatively narrower than in Europeans in Garson's specimens but the reverse was found by Turner in the Brussels specimen.

#### Femur

A detailed description of the femur, as well as of the tibia, in the Brussels skeleton, has been given by Turner (1910). Some measurements on the skeletons in Britain have been given by Barnard Davis (1874), and by Garson (1899); and measurements on femora and tibiae in Hobart by Wunderly (1939), and by Abbie (1964).

Turner found the neck of the femur to be short, the trochanters well developed and the linea aspera prominent, with the middle third of the shaft triangular in section. The platymeric index was less than in Europeans.

#### Tibia

In the Brussels skeleton Turner found the shaft to be laterally compressed, and the anterior border strong and somewhat falciform. The head was retroverted. "Squatting facets" occurred at the lower end of the shaft and on the malleolus, in association with anterior articulation with the talus, which had corresponding articular facets on its neck.

#### Foot

Turner has described the foot in the Brussels skeleton. He points out that the tarso-metatarsal articulation for the hallux would permit a wide range of movement there, and draws attention to the habit of the Tasmanians of grasping the spear between the great and second toes.

### STATURE

Information on stature in the Tasmanians comes from three sources:—

- (a) Statements based upon visual estimates.
- (b) Estimates from the skeleton, or from femur and tibia.
- (c) Measurements of the living people.

Statements based upon visual estimates are of doubtful value. At best they indicate that a native was taller or shorter than the observer, or about the same height. In many cases the emotions (fear, etc.) probably conditioned the estimate. Even so, these estimates give no suggestion that the Tasmanians were a pygmoid people, or even that they were particularly short.

Estimates of stature based upon measurements of the entire skeleton (Barnard Davis, 1874; Garson, 1899;

Turner, 1910), suffer from the defect that soft parts must be allowed for; while those based upon the lengths of femur and tibia also need to take account of the proportion of these parts relative to the total stature. Garson, after allowing for soft parts, estimated stature from the four skeletons in British collections as having a mean value of 1661 mm (5' 5½") for the three males, and 1422 mm (4' 9") in the female; Turner estimated a height of 1572 mm (5' 1½") from the male skeleton in Brussels. Wunderly, calculating from measurements of a series of femora and tibiae, arrived at a mean value of 5' 5" (1651 mm); but he does not state whether he made allowance for the greater relative length of the lower limb in the Tasmanians. Abbie (1964) measured three femora which indicated statures of six feet or more.

There are few measurements of stature on the living aborigines. In 1772 Marion du Fresne measured the body of one man and found the height to be 5' 3" (old French measure = 1705 mm); in 1792 one of D'Entrecasteaux's officers measured two natives, the male being 1705 mm and the woman 1638 mm; and in 1802 Péron measured fourteen natives (? males) and found their average height to be 1705 mm. About 1836 G. A. Robinson measured a number of the captive natives on Flinders Island, obtaining mean values of 5' 3¼" (1618 mm) for twenty-three men and 4' 11½" (1503 mm) for twenty-nine women (Barnard Davis, 1874; in 1875 he stated that these measurements were made on 25 men and 25 women), but a preliminary re-examination of Robinson's data has indicated that the means for both sexes were probably too low. Moreover, there are inconsistencies in Robinson's measurements which will make necessary a careful study of the whole series to determine their reliability.

In view of the lack of precision in some of the measurements and most of the estimates of stature, it can only certainly be said of the Tasmanians that they were not pygmoids, and that they were probably nearly as tall as the "average" Australian aboriginal. This is all very vague and imprecise, but then so is a large part of the data upon which statements have at present to be based. The idea that the Tasmanians were pygmoids probably arose in theories deriving them racially from the Oceanic negritos, but does not seem to have been supported by actual measurements of stature.

There is a fair amount of information concerning stature now available in manuscript accounts of the natives, and a rigorous analysis of this is urgently needed. If to this sort of information is added that determined from measurements of femur and tibia, stature in the Tasmanians will be determinable with much greater precision.

### PROPORTIONS OF THE BODY

Garson (1899) and Turner (1910) have pointed out that the lower limbs were relatively longer in the Tasmanian aborigines than in Europeans, a condition found also in the Australian and some other races. Garson and Turner based their statements on skeletal measurements, none having been published on the living subject.

### THE HAIR

In the Tasmanians the hair of the scalp and beard formed into tightly coiled spiral locks which apparently could be as long as about six inches. The women wore their hair short, the men long. There are no satisfactory reports of any variation in the character: the few specimens of straight or wavy hair in museum collections

which are labelled as Tasmanian are not likely to be so. The "blonde" hair described by Pösch (1916) was thought to resemble the artificially decolourised hair of the melanesians; but possibly it was of hybrid origin.

The coiled hair of the Tasmanians was the subject of comment by nearly all those who saw them. It was first described by Pruner-Bey (1864), and later by Friedenthal (1913), von Luschan (1911), and Turner (1914). The hair is ovoid in cross-section, the ratio of the two diameters giving an index of about 65; the shaft is twisted on itself at intervals.

Preliminary work (Plomley and Baldwin, 1964; Plomley, unpublished) indicates that the form of the hair follicle, and perhaps the arrangement of the follicles, may be characters of diagnostic importance. The form in the Tasmanians apparently resembles that found in certain negritic peoples.

### FACE AND EXTERNAL EAR

Generally speaking, descriptions of the face in the Tasmanians emphasise that the nose was broad and the nostrils distended, the mouth wide and the eyes deeply set; and sometimes a resemblance was found to the features of the negro. Most of the descriptions are very subjective.

Comments made by G. A. Robinson in his journals (Plomley, 1966) make it clear that a fairly wide range of facial form occurred, some natives having thin lips and narrow nose. The same impression is gained from portraits.

Although the number of portraits of the Tasmanians is limited, it will probably be worthwhile to analyse them metrically. The portraits available comprise photographs, paintings in oil and watercolour, pencil sketches, busts and face masks. Their scientific value differs a great deal: the photographs are exact, but are of middle aged or old people who had lived for many years out of their natural environment; the paintings, sketches and busts, though often of young people in their natural state, have usually been europeanised in some degree either by the artist or during the processes of copying for reproduction, or both original and copy suffer from such defects. Before using each portrait it will be necessary to examine its history with care: some are known to be copies of other portraits, others are likely to be copies, and still others probably originated largely in the notions of the artist. Even so, careful selection is likely to leave a sufficient number for an analysis of facial characters.

No work has been published on the external ear in the Tasmanians, but bearing in mind the above comments on the status of the various portraits, a metrical analysis based on the photographs and some of the portraits should produce some information of value.

### PIGMENTATION

The records available, both written and pictorial, lead to the conclusion that skin colour varied in the Tasmanians from reddish-brown to black.

### BLOOD GROUPS

Some data on the ABO and MN blood groups have been published for Tasmanian-Australian-European hybrids by Birdsell and Boyd (1940), and are thought to indicate racial relationships between the Tasmanian and Australian aborigines, but the conclusions reached as to the racial derivation of the hybrids are probably less certain than the authors believed.

It would seem worthwhile, however, to attempt to extend such studies on the Bass Strait "halfcastes" to hybrid Tasmanian families or groups living elsewhere in Tasmania and Australia.

### COMMENTARY

Future studies on the morphology of the Tasmanians will need to consider in the first place the authenticity of the material examined. Precision can only be obtained in morphological studies if the material studied is of known origin, and to this end specimens must be eliminated from a series which are not those of Tasmanian full-bloods, and those included which, though atypical according to present ideas, have been derived from full-bloods. Whatever the future may hold in the way of new methods of identification, the only means at present known is to trace each specimen as far back towards its origin as may be possible, but in spite of the tediousness of such a search and the lack of success likely in very many instances, this procedure may be expected to validate a sufficient number of specimens as a basis for precise group data.

Studies of the skull particularly will benefit from this procedure. To compare satisfactorily the Tasmanian skull with those of other groups, it is essential to have as a basis for comparison a group of skulls known to have been those of Tasmanian full-bloods,\* or which are indicated by the collecting records as likely to have been those of full-bloods. Such a sample, based on origin rather than on morphology, is likely to be more indicative of phylogeny, even though characters now thought to be typically Tasmanian may lose some of their definiteness as the range of variation is widened. It is, of course, highly desirable for one craniologist to re-examine all the Tasmanian crania now existing, and this review of the collections should cover those located in Australia and overseas, both in Europe and the United States. Pending such new work on the Tasmanian skull there seems little point in rehashing the literature on the subject.

\* A major disadvantage in work on the skull (and skeleton) in the Tasmanians is the small amount of material available for study. Attention might be directed to the possibility of obtaining more by the excavation of graves of known full-bloods, both in Tasmania and on the islands of Bass Strait.

The principal object of study of the Tasmanian skull has always been to try to ascertain the racial relationships of this people. From such studies most workers have concluded that the Tasmanians are more closely related to the Australians than to any other group, even if the notions of the racial composition of the Australians have differed among the different investigators. There has been some disagreement as to the particular population of Australian aborigines to which the Tasmanians are most closely related, but this would seem to reflect little more than the incompleteness of our knowledge of variation in cranial form over the Australian continent, a lack which can only be made good by detailed studies on crania from restricted regions (e.g. Freedman, 1964).

Some workers, however, have found closer relationships between the Tasmanians and the Papuans than between the Tasmanians and the Australians, but just as comparisons between Tasmanians and Australians suffer from lack of knowledge of cranial variation in Australia, so do the comparisons between Papuans and Tasmanians from incompleteness of the Papuan series. In this regard, attention is directed to the work of Genet-Varcin (1951), who came to the conclusion that the Tasmanians had not descended from negritos but

only from the same melanodermic stock.

Studies of cranial form made with the object of elucidating racial relationships, have two difficulties to overcome: firstly, to what extent can it be expected that racial relationships will express themselves in cranial form; and secondly, knowing the very large modifications of cranial form which can be produced by the environment, will racial relationships be concealed thereby? The first problem is partly a genetic one and partly a problem of recognition. It amounts on the one hand to the question whether genetic differences will express themselves in distinct morphological differences in the skull, and on the other hand to the recognition of such differences and their phylogenetic trends. It must be admitted that the study of craniology has had its successes mainly in the field of palaeontology, and that in its application to the analysis of racial relationships among modern men it has been far less successful. Perhaps interbreeding and the range of variation in man renders the idea of races untenable in practice however justifiable it may be in theory in relation to isolates. This, of course, does not mean that craniological studies will not reveal differences between populations, differences which are greater the longer the group has been isolated; but such studies will not necessarily point to racial relationships, for even when similarities can be made clear by precise studies of variation, there still remains the possibility that similar environments may be more important in the production of similar form than is common descent. It must also be remembered that racial relationships can only be soundly based if resting upon more than one group of hereditary characters, and where others are known the several groups must be reconciled. With the Tasmanians this has raised difficulties, for in comparing them with the Australians there has been the need to explain the occurrence of ulotrichous hair in the Tasmanians.

To summarise the present position in regard to the ancestry of the Tasmanians, those who hold the view that they were related to the Australian aborigines have to explain the universal (?) occurrence among them of ulotrichous hair (and its absence among the Australian aborigines), while those who consider the Tasmanians to be "negroids" must explain the skeletal and cultural similarities between Australians and Tasmanians. Examination of the problem in terms of population genetics is likely to be rewarding.

In future studies of the Tasmanian aboriginal, there is a good case for analysing the characteristics of crania of known Tasmanian-European hybrids\*. By so doing it is possible not only that some understanding will be gained of the effects of racial mixture on the skeleton, but that an insight will be obtained of the nature of those characters of the hybrid which are Tasmanian in derivation.

\* It is indeed strange that such a study has been neglected, in spite of the difficulties in obtaining known hybrid material; but the neglect is even less understandable in the case of the Australian-European hybrid, where not only are there good opportunities for its study, but it is a matter of some importance in relation to problems of assimilation between the two races.

Apart from the study of the long bones in relation to estimates of stature, it would seem that work on other parts of the skeleton than the skull is not likely to produce much of value. Although very little is known about skeletal morphology in the Tasmanians, the amount of material available for study is so minute (now only about three complete skeletons!) that it is not even possible to say whether normality or abnormality is being observed.

Finally, attention should be directed to the effects of disease and malnutrition on the skeleton in their relation to its morphology. There are some pointers in the literature to such effects: for example, the body habitus of some of the natives sketched by Lesueur in 1802; and the comments by Dumont D'Urville in which the well nourished bodies of the sealers' women are contrasted with those of natives occupying the natural environment. No X-ray examination of the Tasmanian skeleton has so far been undertaken to study the effects of disease and malnutrition on it.

It is clear, therefore, that at present there are few studies which can usefully be made in the subject of physical anthropology in the Tasmanians. Satisfactory techniques have not yet been developed for the determination of blood groups in skeletal and mummified remains and until such time as they become available material should not be destroyed unnecessarily. For the future also must be kept chromatographic studies of the body fats, which it may be possible to undertake on hybrids or perhaps on skeletal or mummified material. Nothing is known of finger, palm and sole prints in the Tasmanians, and anyway the rarity of mummified parts is such that no result of significance could be expected. Altogether, the scope of future work is likely to be confined to those few subjects for investigation mentioned above, until such time as new techniques make possible new researches.

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#### BIBLIOGRAPHY

- ABBIE, A. A. (1964). An examination of the W. L. Crowthor collection of skeletal material. *Pap. Proc. Roy. Soc. Tasm.*, 98, pp. 53-62.
- BASEDOW, H. (1910). Der Tasmanierschädel, ein Insulartypus. *Zeits. Ethnol.*, 42, pp. 175-227.
- BERRY, R. J. A. AND ROBERTSON, A. W. D. (1909). Dioptrographic tracings in four normae of fifty-two Tasmanian crania. *Trans. Roy. Soc. Vict.*, 5, pp. 1-11, 211 pls.
- BERRY, R. J. A., ROBERTSON, A. W. D. AND BUCHNER, L. W. G. (1914). The craniometry of the Tasmanian aboriginal. *J. Roy. Anthropol. Inst.*, 44, pp. 122-126, table 1.
- BIRDSELL, J. B. AND BOYD, W. C. (1940). Blood groups in the Australian aborigines. *Amer. J. Phys. Anthropol.*, 27, pp. 69-90.
- BLANCHARD, E. (1854). Anthropologie. In: Dumont D'Urville, *Voyage au pôle sud et dans l'Océanie (1837-1840)*.
- BROCA, P. (1879). Méthode des moyennes. Etude des variations craniométriques et de leur influence sur les moyennes; détermination de la série suffisante. *Bull. Soc. d'Anth.*, Paris, (3) 2, pp. 756-820.
- CAMPBELL, T. D. (1925). Dentition and palate of the Australian aboriginal. *Univ. Adelaide, Publ. Sheridan Found.*, 1, pp. i-viii, 1-123, pls. 1-53.
- CROWTHER, W. L. AND LORD, C. E. (1921). A descriptive catalogue of the osteological specimens relating to the Tasmanian aborigines contained in the Tasmanian Museum. *Pap. Proc. Roy. Soc. Tasm.*, for 1920, pp. 137-152.
- CUNNINGHAM, D. J. (1886). The lumbar curve in man and the apes. *Royal Irish Academy, Cunningham Memoirs*, 2, 148 pp., 12 pls.
- DAVIS, J. BARNARD (1867). *Thesaurus craniorum* (London).
- ..... (1874). On the osteology and peculiarities of the Tasmanians, a race of man recently become extinct. (Haarlem).
- ..... (1875). Supplement. *Thesaurus craniorum*. (London).
- FLOWER, W. H. (1879). Catalogue of the specimens illustrating the osteology and dentition of vertebrated animals, recent and extinct, contained in the museum of the Royal College of Surgeons of England. Part 1. Man. (London). (2nd ed.: 1907).
- FRIEDENTHAL, H. (1913). Vergleich von Tasmanierkopffhaaren mit den Kopffhaaren anderer Menschenrassen. *Zeits. Ethnol.*, 45, pp. 49-56.
- GARSON, J. G. (1899). Osteology. In: Ling Roth, *The aborigines of Tasmania*.
- GENET-VARCIN, E. (1951). Les négritos de l'île de Luçon (Philippines). *Soc. d'Anth.*, Paris, 260 pp.
- HARPER, W. R. AND CLARKE, A. H. (1898). Notes on the measurements of the Tasmanian crania in the Tasmanian Museum. *Pap. Proc. Roy. Soc. Tasm.*, for 1897, pp. 97-110, pls. 1, 2.
- KLAATSCH, H. (1903). Bericht über einem anthropologischen Streifzug nach London und auf das Plateau von Süd-England. *Zeits. Ethnol.*, 35, pp. 875-920.
- ..... (1908). The skull of the Australian aboriginal. *Rept. Path. Lab. Lunacy Dept. N.S.W.*, 1 (3), pp. 45-167, pls. 1-105.
- LORD, C. E. (1919). Preliminary note upon the discovery of a number of Tasmanian aboriginal remains at Eaglehawk Neck. *Pap. Proc. Roy. Soc. Tasm.*, for 1918, pp. 118-119.
- LUSCHAN, F. VON (1911). (Eine Haarprobe von einem Tasmanier). *Zeits. Ethnol.*, 43, p. 271.
- MORANT, G. M. (1927). A study of the Australian and Tasmanian skulls, based on previously published measurements. *Biometrika*, 19, pp. 417-440.
- ..... (1939). Note on Dr J. Wunderly's survey of Tasmanian crania. *Biometrika*, 30, pp. 338-340.
- PLOMLEY, N. J. B. (1962). A list of Tasmanian aboriginal material in collections in Europe. *Rec. Q.V. Mus. Launceston*, n.s. 15, 18 pp.
- ..... (ed.) (1966). Friendly mission. *The Tasmanian journals and papers of George Augustus Robinson, 1829-1834*. (Tas. Hist. Res. Assocn., Hobart).
- PLOMLEY, N. J. B. AND BALDWIN, F. (1964). The hair follicle in the Tasmanian aborigine. *J. Anat.*, 98, pp. 493-494.
- PÖCH, R. (1916). Ein Tasmanierschädel im K.K. naturhistorischen Hofmuseum. Die anthropologische und ethnographische Stellung der Tasmanier. *Mit. Anthropol. Gesell. Wien*, 46, pp. 37-91, pls. 1-9.
- ..... (1916). Über das "blonde" Tasmanierhaar. *Mit. Anthropol. Gesell. Wien*, 46, p. 186.
- PRUNER-BEY (1864). On human hair as a race-character, examined by the aid of the microscope. *Anthropol. Rev.*, 2, pp. 1-23.
- QUATREFAGES, A. DE AND HAMY, E. T. (1882). *Crania ethnica. Les crânes des races humaines*. (Paris).

- STEADMAN, F. ST. J. (1937). Malocclusion in the Tasmanian aborigines. *Dental Record*, 57, pp. 213 - 249, 297, 1 pl.
- TOPINARD, P. (1872). Etude sur les Tasmaniens. *Mem. Soc. Anthropol. Paris*, 3, pp. 307 - 329, pls. 1 - 3.
- TURNER, W. (1908). The craniology, racial affinities, and descent of the aborigines of Tasmania. *Trans. Roy. Soc. Edin.*, 46, pp. 365 - 403, pls. 1 - 3.
- ..... (1910). The aborigines of Tasmania. Part II. The skeleton. *Trans. Roy. Soc. Edin.*, 47, pp. 411 - 454, pls. 1, 2.
- ..... (1914). The aborigines of Tasmania. Part III. The hair of the head compared with that of other Ulotrichi and with Australians and Polynesians. *Trans. Roy. Soc. Edin.*, 50, pp. 309 - 347.
- VERNEAU, R. (1875). Le bassin dans les sexes et dans les races. (Paris).
- WUNDERLY, J. (1938). The west coast tribe of Tasmanian aborigines. *Man*, 38, pp. 121 - 124, pl. H.
- ..... (1939). The cranial and other skeletal remains of Tasmanians in collections in the Commonwealth of Australia. *Biometrika*, 30, pp. 305 - 337, pls. 1 - 6.
- WUNDERLY, J. AND JONES, F. WOOD (1933). The non-metrical morphological characters of the Tasmanian skull. *J. Anat.*, 67, pp. 583 - 595.